

## **IN THE SUBSTITUTE SPECIFICATION**

Please cancel paragraphs 005, 007, 010, 011, 013, 017, 025, 026 and 028 of the Substitute Specification. Please replace those cancelled paragraphs with replacement paragraphs, also 005, 007, 010, 011, 013, 017, 025, 026 and 028, as follows.

**[007]** A device for bracing a printing plate on a plate cylinder of a printing press is known from DE 41 40 022 C2. Clamping devices for the front edge of the plate and for the rear edge of the plate are situated in an axially extending groove of the cylinder. The clamping device for the front edge of the plate can be adjusted in the axial direction of the cylinder by adjustment device. The adjustment device can be displaced by an by an electric drive motor that is housed in the cylinder. An adjusting shaft of the drive motor projects perpendicularly from the interior of the cylinder into the groove. A rotating movement of the adjusting shaft is converted into an axial adjusting movement.

**[010]** A device for use in the bracing/clamping of flexible plates with beveled suspension legs on a printing press cylinder is known from DE 199 24 788 A1. A base A base body, with bracing and/or clamping elements, which are movable in the base body's interior space, is arranged in a cylinder groove.

[011] A device for adapting the position of printing plates in response to deformation of the paper to be imprinted is known from DE 195 16 368 A1. A position of a punched-out place on a printing plate, which is provided for receipt of a registration pin, and which is used for accomplishing the adjustment of the printing plates arranged on a forme cylinder of a printing press, is adapted to correspond to a lateral extension or fan out of the paper, which fan out is to be expected in the course of the passage of the paper through a plurality of print positions of the printing press, which are arranged serially one behind the other.

[013] In accordance with the present invention, the object is attained by the provision of at least one groove in a cylinder, which is a part of each one of serially arranged print positions. The groove carries at least one dressing end holding device that is shiftable over an actuating path oriented axially in the cylinder by the operation of an actuator. That actuator changes its length axially with respect to the cylinder in response to a control signal. Several axially spaced dressings may be arranged on the cylinder and the actuator can be used to change an axial spacing between these dressings. This actuator may be electrically operable. When a multi-color image is applied to a web by passage of the web through serially arranged print

positions, the actuators at each position can be used to compensate for lateral fan out of the web.

**[017]** Shown are in:

Fig. 1, a schematic depiction of the passage of material to be imprinted extending underneath a cylinder of a printing unit in accordance with the present invention, in

Fig. 2, a partial sectional representation of a portion of a cylinder with a groove and with a holding device for a dressing arranged in that groove, and in

Fig. 3, a partial cross-sectional representation of an actuator in a groove in a cylinder in accordance with the present invention.

**[025]** The lateral extension or fanning out Q of the material 24 to be imprinted leads to problems, particularly in a printing unit in which the material 24 to be imprinted is to be printed in more than one color. The printing unit, which is not specifically depicted, can be embodied, for example, as a nine-cylinder satellite printing unit, in which four pairs of cylinders 01, each consisting of a forme cylinder 01 and of a transfer cylinder 01, are arranged in a frame around a common counter-pressure cylinder. Each such pair of cylinders 01 constitutes a print position

and prints a definite color, which will form part of the same printed image, on the material 24 to be imprinted. Even with a printing unit embodied as a nine-cylinder satellite printing unit, and in which the four print positions responsible for the individual colors are arranged next to each other in a narrow space, the material 24 to be printed still travels over a path of up to 1 m in length until all four colors for a common printed image have been applied to the material 24 to be imprinted. With different configurations of the printing unit, the path traveled by the material 24 to be imprinted, from the printing of a first color to the printing of a last color of a common multi-colored printed image is even much longer. For example, this path may be longer than 3 m. The dimensional change of the material 24 to be imprinted, because of the lateral extension or fanning out Q, can be correspondingly greater and is long-lasting or permanent. If, on its way from one print position to the next, the material 24 to be imprinted changes in its dimensions transversely to the production direction P of the cylinder 01, an inaccurate fit between color points which are to be printed next to, or above each other, and of which color points the printed image is composed, results. If this so-called indexing is too inaccurate, so that the indexing accuracy exceeds a definite tolerance of, for example, 50  $\mu\text{m}$ , the human eye recognizes this indexing inaccuracy, and the quality of the printed image is judged to be bad. Moreover, it is necessary to arrange the printing formes, which are required for printing each of the different colors of the same printed image, on each of their respective cylinders 01 in such a way, that

the printing formes of all of the print positions are aligned with each other as exactly as possible for forming or producing the common printed image during the printing process. This is called the called the side and the circumferential registration accuracy of the printing formes. In actuality, in indexing, as well as in side and in circumferential registration, accuracy of 10  $\mu$ m and less is currently often demanded. The dimensional instability of the material 24 to be imprinted, which is caused, in caused in particular, by the hygroscopic behavior of material 24, makes it necessary to arrange for the alignment of each of the respective dressings 02 placed on a cylinder 01, for example each of the printing formes 02, and in particular each of the printed images made by each of these printing formes 02, to be adaptable and to be adjustable with respect to each other during the ongoing printing process.

**[026]** It is proposed, in accordance with the present invention, to provide at least one second actuating device 26, which is controllable from outside the print position, or from outside the printing unit, and which preferably is an actuator 26, which displaces a holding device displaceably arranged for axial movement in a groove 11. By the use of this second, laterally operating actuator 26, a dressing 02 is positioned on a cylinder 01, at least in the axial direction of the cylinder 01. The actuator 26 can be configured as a piezo-electric system or as a

magnetostrictive system, which actuator 26 is arranged in a housing with an actuator head element 27 and with an actuator base element 28 and which actuator 26 has been inserted into the groove 11, typically wherein at least the base element 28 of the actuator housing is rigidly connected with the groove 11. The imposition of an applied electrical control signal, US, causes the head element 27 to make a translatory movement over a defined actuating path "s," while the base element 28 remains stationary. In this case, the actuating path "s" of an actuator 26 can lie in the range of approximately 100  $\mu\text{m}$ . However, displacements of up to a total of 2 mm can be necessary.

**[028]** The housing of the actuator 26 can be arranged in the groove 11, for example, in such a way, in relation to a holding device 18, that the actuating path "s" shown in Fig. 3 caused by the head element 27 of the actuator 26 acts directly on the holding device 18, and the head element 27 of the actuator 26 displaces the holding device in a direction corresponding to the actuating path "s" in the groove 11. If the holding device 18 is arranged in a base body 22, as seen in Fig. 2, and is rigidly connected with the base body 22, the actuating path s caused by the actuator 26 preferably acts on the base body 22 arranged in the groove 11. To make a simple matching of at least the head element 27 of the actuator 26 to the holding device 18 to be displaced, or to the base body 22 to be displaced, it is advantageous to match the shape of the housing of the

actuator 26 to the geometry of the groove 11 and, if necessary, to match at least the base element 28 to the groove 11 in the sense of providing a close fit. If the groove 11 is embodied as a circular bore, the cylindrical embodiment of the housing of the actuator 26 suggests itself. To provide as long as possible an actuating path "s" by the use of an actuator 26 utilizing the piezo effect or magnetostriction, it is advantageous to select a structural shape of the actuator 26 wherein the length  $l_{26}$  of the actuator 26, which length  $l_{26}$  extends in the same direction as the actuating path "s," is clearly greater than the actuator dimensions extending transversely to the actuator length  $l_{26}$ . Thus, a ratio of the actuator length  $l_{26}$  to width  $b_{26}$  of the actuator 26 is at least 2:1, and, in particular, is greater than 4:1, from which there results a longer, narrower structural shape of the actuator 26. The effective direction and, corresponding to it, the installed position of the actuator 26, is always selected to be directed in the same way as the intended displacement of the holding device, or of the base body 22.